

## METHOD FOR MANAGING PHYSICAL DISTRIBUTION WITH RETURNABLE CONTAINERS

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

**[0001]** The present invention relates to an improved method for managing physical distribution of products and returnable containers in which a first party ships at least one product packed in a returnable container to a second party upon a request from the merchandiser to ship the at least one product, and the merchandiser sends back the returnable container to the manufacturer.

#### 2. Description of the Related Art

**[0002]** A method for managing physical distribution of products and containers in which a manufacturer ships at least one product to a merchandiser upon a request from the merchandiser to ship the products has been conventionally employed in various kinds of industries. In recent years, an issue of recycling materials has been discussed, and a movement of reusing containers used in shipping at least one product has become larger. As means for this sake, a physical distribution method in which returnable containers are used as the containers, the manufacturer ships the products packed in the returnable containers to the merchandiser upon the request from the merchandiser to ship the products and the merchandiser sends back the returnable containers of the received products to the manufacturer begins to be implemented.

**[0003]** The aforementioned physical distribution method using the returnable containers is effective in terms of recycling materials since the method can reuse the containers for packing the products which used to be thrown away. However, in this method, since the products should be always packed in the returnable containers, such a problem has been caused that the products cannot be sent unless the distribution of the returnable containers is well managed. That is, when the manufacturer intended to ship the products upon the request from the merchandiser to ship the products, the products could not be shipped without sufficient number of the returnable containers existing at the manufacture's side. In addition, as is the case with the conventional physical distribution methods, there was a difficulty in managing the inventory of the product at the manufacture's side since the request

from the merchandiser to ship the products was in flux, especially when two or more merchandisers exist.

#### Summary of the Invention

**[0004]** It is an object of the present invention to solve the above problems and to provide a physical distribution method which enables inventories of the returnable containers and the products to be effectively managed.

**[0005]** A physical distribution method of the present invention is a method for managing physical distribution of products and returnable containers in which a manufacture (first party) ships at least one products packed in a returnable container to a merchandiser (second party) upon a request from the merchandiser to ship the products and the merchandiser sends back the returnable containers to the manufacturer, said method comprising the steps of:

receiving a request from the merchandiser to ship at least one product;

determining a product inventory balance based on inventory information about the products and the request to ship at least one product, and based on the product inventory balance determination sending a product-shipping notice to the manufacturer; and

determining a returnable container inventory balances based on inventory information about the returnable containers and the received request to ship at least one product, and based on the returnable container inventory balance determination sending a returnable container-returning notice to the merchandiser.

**[0006]** The merchandiser in the present invention is not limited to a retailer of the final products, but includes receivers of the products from the manufacturer, such as a wholesaler, an assembling plant runner, a processing plant runner or the like. The manufacturer in the present invention is not limited to a producer of the final products, but includes senders of the products to the merchandiser, such as a wholesaler, a sections plant, a raw material producer or the like.

**[0007]** In the present invention, inventories of the returnable containers and products can be effectively managed by, in response to the product-shipping request of the merchandiser, calculating a product inventory balance based on the inventory information about the products to send the product-shipping notice to the manufacturer as well as calculating a returnable container inventory balances based on the inventory information about the returnable containers to send a returnable

container-returning notice to the merchandiser.

**[0008]** In a preferred embodiment of the present invention, the manufacturer, the merchandiser and a server for storing inventory information databases of the products and the returnable containers are interconnected via a computer network,

5 and

A. the merchandiser transmitting the request to ship at least one product to the server via the computer network;

B. the server, in response to the received request,

10 a) calculating product inventory balance from a desired number of stock based on the request to ship at least one product and the inventory information database of the products and transmitting the product-shipping notice to the manufacturer via the computer network to urge the manufacturer to make the products if the stock of the products is below a predetermined level;

15 b) calculating returnable container inventory balance from a desired number of stock based on the inventory information database of the returnable containers and transmitting the returnable container-returning notice to the merchandiser via the computer network to urge the merchandiser to return the returnable-containers if the stock of the returnable containers is below a predetermined level; and

20 c) transmitting the request to ship at least one product to the manufacturer via the computer network;

C. the manufacturer, in response to the received request to ship at least one product, ships the products packed in the returnable container to the merchandiser.

**[0009]** In another preferred embodiment of the present invention, the actual inventory of the products is adjusted to a predetermined level by the manufacturer  
25 based on the manufacturer receiving the product-shipping notice so that the actual inventory after the shipment may be at a desired level. The returnable containers are sent to the manufacturer by the merchandiser based on the merchandiser receiving the returnable container-returning notice so that the actual inventory at the manufacturer's side may be at a desired level. Further,

30 A. the manufacturer transmitting to the server via the computer network data indicating a number of the products shipped from the manufacturer, and

B. the server renewing the inventory information database of the products based on the number of shipped products received by the merchandiser. Furthermore,